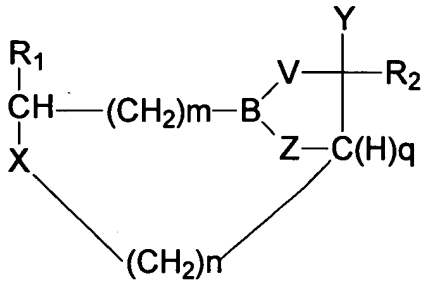
26. (Amended) A boron-containing of formula [II] I



[(II)] (I)

wherein

R_1 and R_2 may be the same or different and each is a side chain of a naturally occurring amino acid, a [hydroxy] hydroxyl containing side chain of a naturally occurring amino acid wherein said [hydroxy] hydroxyl group may be glycosylated, phosphorylated, sulphonylated or protected by a [hydroxy] hydroxyl protecting group, a primary amino [amido] containing side chain of a naturally occurring amino acid wherein said amino group may be glycosylated or substituted by $(C_2–C_4)$ alkyl, $–CH_2CH(CO_2H)_2$, $–(CH_2)_2 S(O)CH_3$, $–(CH_2)_2 S(O)_2 CH_3$, $–(CH_2)_3 NH_2$ or $–(CH_2)_3 ONHC(=NH)NH_2$;

V is O, CH_2 or NH;

X is hydrogen, oxygen, amino, amino protected by a protecting group selected from the group consisting of terminal amino protecting groups, amino bonded to the C terminus of a naturally occurring amino acid to form a peptide bond, and amino bonded to the C terminus of a peptide to form a peptide bond, [said amino acid and peptide being unprotected or protected by said protecting group, or X is] alkene, $(C_1–C_9)$alkyl, $(C_1–C_9)$alkoxy or phenyl, phenoxy, cyclohexyl, phenylthio, phenylsulfinyl [or] and phenylsulfonyl, wherein the aforementioned

phenyl groups may be unsubstituted or mono-, di- or trisubstituted by halogen, (C_1–C_4)alkoxy or (C_1.C_4)alkoxycarbonyl;

Y is hydrogen, carboxyl, carboxyl protected by a protecting group selected from the group consisting of terminal carboxyl protecting groups, a carbonyl bonded the N terminus of a naturally occurring amino acid to form a carbonyl bonded to the N terminus of a peptide to form a peptide bond, [said amino acid and peptide being protected or unprotected by said protecting group, or Y is] (C_1–C_9)alkyl, (C_1–C_9)alkoxy, or phenyl phenoxy, cyclohexyl, phenylthio, phenylsulfinyl [or] and phenylsulfonyl, wherein the aforementioned phenyl groups may be unsubstituted or mono-, di- or trisubstituted by halogen, (C_1–C_4)alkyl, (C_1-C_4)alkoxy or (C_1.C_4)alkoxycarbonyl; and wherein

Z is O, CH_2 or NH;

m is 0 or an integer from 1 to 10;

n is 0 or 1; and

q is 1 or 2 provided that if q is 2, then there is no bond between X and the carbon bond to Z.

29. (Amended) A hapten according to claim 26 wherein

R_1 is selected from the group consisting of CH_2OH and $CH(OH)CH_3$,

R_2 is selected from the group consisting of $CH(OH)CH_3$ and CH_2CONH_2,

X is selected from the group consisting of an amino group bonded to the C terminus of alanine, an amino group bonded to the C terminus of serine in the dipeptide Ala–Ser, an amino group bonded to the C terminus of threonine in the tripeptide Ala–

Ser–Thr, and an amino group bonded group to the C terminus of threonine in the polypeptide Ala–Ser–Thr–Thr; and

Y is selected from the group consisting of a carbonyl bonded to the N terminus of threonine in the polypeptide Thr–Thr–Asn–Tyr–Cys, a carbonyl bonded to the N terminus of threonine in the polypeptide Thr–Asn–Tyr–Cys, a carbonyl bonded to the N terminus of asparagine in the tripeptide Asn–Tyr–Cys, and a carbonyl bonded to the N terminus of tyrosine in the dipeptide Tyr–Cys.

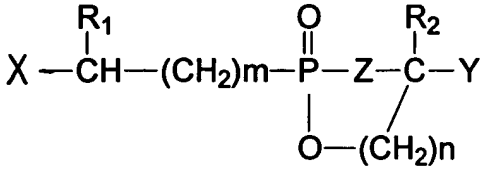
30. (Amended) A hapten according to claim 26 wherein R_1 is $CH(OH)CH_3$, R_2 is H, X is an amino group bonded to the C terminus of serine in the polypeptide Cys–Leu–Arg–Tyr–Ser and Y is a carbonyl bonded to the N terminus of threonine in the tripeptide Thr–Val–Cys.

32. (Amended) An immunogen capable of eliciting a catalytic antibody comprising:

(a) a hapten of formula [II] I as defined in claim 27; and

(b) a suitable carrier molecule.

33. (Amended) A phosphous containing hapten of formula [III] II



[(III)] (II)

wherein

R_1 and R_2 may be the same or different and each is a side chain of a naturally occurring amino acid, a [hydroxy] hydroxyl containing side chain of a naturally occurring amino acid wherein said [hydroxy] hydroxyl group may be glycosylated, phosphorylated, sulphonylated or

protected by a [hydroxy] hydroxyl protecting group, a primary [amido] amine containing side chain of a naturally occurring amino acid wherein said [amido] amine group may be glycosylated or substituted by $(C_1–C_4)$alkyl, $–CH_2CH(CO_2H)_2$, $-(CH_2)_2S(O)CH_3$, $–(CH_2)_2S(O)_2CH_3$, $–(CH_2)_3NH_2$ or $–(CH_2)_3ONHC(=NH)NH_2$;

X is hydrogen, amino, amino group protected by a protecting group selected from the group consisting of terminal amino protecting groups, amino group bonded to the C terminus of a naturally occurring amino acid to form a peptide bond, and an amino group bonded to the C terminus of a peptide to form a peptide bond, [said amino acid and peptide being unprotected or protected by said protecting group, or X is] alkene, $(C_1–C_9)$alkyl, $(C_1–C_9)$alkoxy or phenyl, phenoxy, cyclohexyl, phenylthio, phenylsulfinyl [or] and phenylsulfonyl, wherein the aforementioned phenyl groups may be unsubstituted or mono-, di- or trisubstituted by halogen, $(C_1–C_4)$alkyl, $(C_1.C_4)$alkoxy or $(C_1.C_4)$alkoxycarbonyl;

Y is hydrogen, carboxyl, carboxyl protected by a protecting group selected from the group consisting of terminal carboxyl protecting groups, a carbonyl bonded to the N terminus of a naturally occurring amino acid to form a peptide bond, and carbonyl bonded to the N terminus of a peptide to form a peptide bond, [said amino acid and peptide being protected or unprotected by said protecting group, or Y is] $(C_1–C_9)$alkyl, $(C_1–C_9)$alkoxy or phenyl, phenoxy, cyclohexyl, phenylthio, phenylsulfinyl [or] and phenylsulfonyl, wherein the aforementioned phenyl groups may be unsubstituted or mono-, di- or trisubstituted by halogen, $(C_1–C_4)$alkyl, $(C_1.C_4)$alkoxy or $(C_1.C_4)$alkoxycarbonyl;

Z is O or NH; and

m and n may be the same or different and each is 0 or an integer from 1 to 10.

34. (Amended) An immunogen capable of eliciting a catalytic antibody comprising:

B3

(a) a hapten of formula [III] II as defined in claim 33; and

(b) a suitable carrier molecule.

39. (Amended) A catalytic antibody which [can catalyze] catalyzes a chemical reaction of interest and which is elicited through *in vitro* or *in vivo* techniques by an antigen comprising the hapten of claim 26, said catalytic antibody having been prepared by a process comprising the steps of:

B4

(a) exposing cells capable of producing antibodies to said antigen and thereby generating antibody producing cells;

C3

(b) hybridizing said antibody producing cells with myeloma cells and thereby generating a plurality of hybridoma cells each producing monoclonal antibodies; and

(c) screening said plurality of monoclonal antibodies to identify a monoclonal antibody which catalyzes said chemical reaction of interest.

40. (Amended) A catalytic antibody which [can catalyze] catalyzes a chemical reaction of interest and which is elicited through *in vitro* or *in vivo* techniques by an antigen comprising the hapten of claim 33, said catalytic antibody having been prepared by a process comprising the steps of:

(a) exposing cells capable of producing antibodies to said antigen and thereby generating antibody producing cells;

(b) hybridizing said antibody producing cells with mecloma cells and thereby generating a plurality of hybridoma cells each producing monoclonal antibodies; and

(c) screening said plurality of monoclonal antibodies to identify a monoclonal antibody which catalyzes said chemical reaction of interest.

42. (Amended) A method for producing catalytic antibodies which [can catalyze] catalyzes a chemical reaction of interest and which are elicited through in vitro or in vivo techniques by an antigen comprising the hapten of claim 26, wherein said method comprises the steps of:

(a) exposing cells capable of producing antibodies to said antigen and thereby generating antibody producing cells;

(b) hybridizing said antibody producing cells with myeloma cells and thereby generating a plurality of hybridoma cells each producing monoclonal antibodies; and

(c) screening said plurality of monoclonal antibodies to identify a monoclonal antibody which catalyzes said chemical reaction of interest.

43. (Amended) A method for producing catalytic antibodies which [can catalyze] catalyzes a chemical reaction of interest and which are elicited through *in vitro* or *in vivo* techniques by an antigen comprising the hapten of claim 33, wherein said method comprises the steps of:

(a) exposing cells capable of producing antibodies to said antigen and thereby generating antibody producing cells;

(b) hybridizing said antibody producing cells with myeloma cells and thereby generating a plurality of hybridoma cells each producing monoclonal antibodies; and

(c) screening said plurality of monoclonal antibodies to identify a monoclonal antibody which catalyzes said chemical reaction of interest.

48. (Amended) A method for catalyzing the cleavage or formation of a specific peptide linkage or an ester bond within a specific amino acid sequence of a molecule which comprises contacting said molecule with an effective amount of a catalytic antibody elicited with a hapten